

5    **I CLAIM:**

1. A catheter for the administration of fluid or pharmaceutical agents, or for hemodialysis comprising:

- a) a proximal control end comprising a housing with a proximal end and a distal end;
- b) a distal delivery end;

10    c) an elongated intermediate portion between the proximal control end and a distal delivery end;

d) one or more than one delivery lumen within the intermediate portion extending from the proximal control end to the distal delivery end;

e) one or more than one inflation balloon in each delivery lumen; and

15    f) one or more than one inflation lumen in the intermediate portion extending from the proximal control end to the one or more than one inflation balloon in the one or more than one delivery lumen, and connected to the one or more than one inflation balloon through one or more than one fenestration;

20    where the proximal control end further comprises a mechanism for aspiration and injection of fluids through the distal delivery end; and

where the proximal control end further comprises a mechanism for controlling inflation of the one or more than one inflation balloon.

2. The catheter of claim 1, where the one or more than one delivery lumen is two delivery lumens.

25    3. The catheter of claim 1, where the one or more than one delivery lumen has an axial length of between about 10 cm and about 50 cm.

4. The catheter of claim 1, where the intermediate portion has a cross-sectional area and where the cross-sectional area is between about 1 cm and about 3 cm.

30    5. The catheter of claim 1, where the intermediate portion comprises an external surface and the one or more than one delivery lumen comprises an intraluminal surface; and where the external surface or the intraluminal surface or both comprise at least one

5 hydrophilic coating.

6. The catheter of claim 1, where the intermediate portion comprises an external surface and the one or more than one delivery lumen comprises an intraluminal surface; and where the external surface or the intraluminal surface or both comprise heparin molecules bound to the external surface or to the intraluminal surface, or both, to reduce the accumulation of thrombus and fibrin on these surfaces.

7. The catheter of claim 1, where the inflation lumen has an internal diameter of between about 0.4 and about 0.7 mm.

8. The catheter of claim 1, where the housing comprises one or more than one anchoring device.

9. The catheter of claim 1, where the mechanism for aspiration and injection of fluids comprises one or more than one combined aspiration and injection port.

10. The catheter of claim 9, where the combined aspiration and injection port is concave toward the distal end of the housing.

11. The catheter of claim 9, where each of the one or more than one combined aspiration and injection port has a distal end and where the mechanism for aspiration and injection of fluids further comprises one or more than one aspiration and injection conduit connecting the distal end of each port to the one or more than one delivery lumen.

12. The catheter of claim 11, where the mechanism for aspiration and injection of fluids further comprises constricting means for constricting the aspiration and injection conduit.

13. The catheter of claim 1, where the mechanism for controlling inflation of the one or more than one inflation balloon comprises inflation means and deflation means.

14. The catheter of claim 13, where the inflation means comprises a reservoir and an inflation actuator.

15. The catheter of claim 14, where the housing has a superior surface, and where the inflation actuator comprises a tactile recognizable surface that projects from the superior

5 surface of the housing.

16. The catheter of claim 13, where the inflation means comprises an elastic bulb.

17. The catheter of claim 13, where the inflation means comprises a rigid upper unit slidably fitting into a rigid lower reservoir and separated by a reservoir spring coil within the reservoir.

10 18. The catheter of claim 14, where the reservoir connects to the one or more than one inflation lumen through an antegrade flow conduit, and where the inflation means further comprises a one-way, antegrade flow valve between the inflation lumen and the antegrade flow conduit.

15 19. The catheter of claim 14, where the reservoir connects to the one or more than one inflation lumen through one or more than one retrograde flow conduit, and where the inflation means further comprises a one-way, retrograde flow valve between the one or more than one inflation lumen and each retrograde flow conduit.